



State of Oregon  
Department of  
Environmental  
Quality

NOTICE OF INTENT TO CONSTRUCT

FORM AQ104  
ANSWER SHEET

FOR DEQ USE ONLY	
Permit Number:	Regional Office:
Application No:	Date Received :

1. Source Number: 26-3048-ST-01	
2. Company	3. Facility Location
Legal Name: Oil Re-Refining Company, Inc	Name: Same
Ownership type: Privately Owned	Plant start date:
Mailing Address:	Street Address:
4150 N Suttle Road	Same
City, State, Zip Code:	City, County, Zip Code:
Portland, OR 97217	Same
4. Number of Employees (corporate): 48	Number of Employees (plant site): 25

5. Facility Contact Person	6. Industrial Classification Code(s)
Name: Scott Briggs	SIC: 5093 / 1799
Title: Principal	NAICS: 423930 / 562910
Phone number: 503-286-8352	7. Type of construction/change: (see instructions)  Type 1
Fax number:	
e-mail address: scottb@orrco.biz	

8. Signature	
<i>I certify that the information contained in this notice, including any schedules and exhibits attached to the notice, are true and correct to the best of my knowledge and belief.</i>	
Scott Briggs	Principal
Name of official (Printed or Typed)	Title of official and phone number
	9/28/16
Signature of official	Date



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Construction Information

9. Description of proposed construction:

See Attachment A.

10. Will the construction increase the capacity of the facility?  If yes, how much?

11. Will the construction increase pollutant emissions?  If yes, how much (see question 19) ?

12. Will the construction cause new pollutant emissions?  If yes, which pollutants and how much?

13. Estimated timing of construction.

a.	Commence date:	10/1/16
b.	Begin date:	10/20/16
c.	Completion date:	4/1/17

14. Will tax credits be requested once construction is completed?

15. Attach relevant forms from Form Series AQ200, Device/Process Forms.

16. Attach relevant forms from Form Series AQ300, Control Device Description Forms, if applicable.

17. Attach process flow diagram.

18. Attach a city map or drawing showing the facility location.

19. If applicable, attach a Land Use Compatibility Statement.



**NOTICE OF INTENT TO CONSTRUCT**

**Emissions Data**

20. Pre-and Post-Construction emissions summary data

a. Emissions Point	b. Pollutant	c. Pre-Construction Emissions		d. Post-Construction Emissions	
		short-term (specify unit)	Annual (tons/year)	short-term (specify unit)	Annual (tons/year)
Cooker Emission	VOC		31.7		0.33
Rocket Test Sys	SO2		0		0.115
Sour water Scru	VOC		0		0.25

**SUBMIT TWO COPIES OF THE COMPLETED NOTICE OF INTENT TO CONSTRUCT TO THE DEPARTMENT REGIONAL OFFICE SHOWN BELOW:**

Oregon Department of Environmental Quality  
Northwest Region  
700 NE Multnomah Street, Suite 600  
Portland, OR 97232



## **Attachment A**

### **Notice of Intent to Construct Description 9/30/16**

ORRCO is planning on the following changes to our process. These changes will substantially reduce our VOC emissions. We would like to start implementing these changes immediately upon approval. The specific changes are described below:

#### ***NOIC changes:***

1. Replace the bubble condenser with heat exchangers on the three existing cookers: #9, #10, and #11. Channel the vents from the cookers to a thermal oxidizer in our existing burner.
2. Change the three cookers from batch to continuous flow (no change in emissions, this is primarily so the thermal oxidizer/heater will run continuously).
3. Modify our existing heater to also be a thermal oxidizer.
4. Install a control system for all cookers with an automatic bypass valve to carbon barrels that will shut down the feed, switch to the carbon, and sound an alarm if the thermal oxidizer is not operating within normal parameters.
5. Add a sour water stripper for the process water to recover the fuel and strip the odor from the water. The vent from this would also flow to the thermal oxidizer.
6. Install a single column rocket for testing and data acquisition for our permit renewal.
7. Startup our standby boiler and shut down our existing Kewanee boiler (no emission change).

#### ***Replace Bubble Condenser:***

The existing bubble condenser is by far the largest source of VOCs in our permit. The vapors from cooker tanks #9, #10 and #11 are condensed in the bubble tank. We propose replacing it with three separate shell and tube condensers, one on each cooker. These condensers would each have a separate receiver to collect the light distillates and water. The vent from these receivers will go to the burner/thermal oxidizer creating a closed system, substantially reducing our VOC emissions.

#### ***Change the three cookers from batch to continuous flow:***

The three cookers are currently batch processes. We fill the cook tank, heat it (250 degrees F. typically), then transfer the cooked oil to a storage tank. There are many benefits to a continuous flow cooker: it is much more efficient, the heat of the finished oil exiting the cooker preheats the oil feeding into the cooker. Continuous flow also allows the heater/thermal oxidizer to run continuously to destroy the VOCs. The feed rate can vary depending on the production needs. There are additional controls and safeguards as well.

#### ***Modify our existing heater to also be a thermal oxidizer:***



A Thermal Oxidizer (TOX) with >1400 degrees F temperature and a one second residence time will destroy the VOCs. The same heater used for the oil process can be modified to have a one second residence time, >1400 degrees F temperature, and the proper turbulence to assure 99%+ destruction. Using the same heater as the TOX is much more efficient and recovers the energy from the VOCs. A stand-alone TOX would burn several gallons per hour of fuel with no recovery of the heat.

***Install a control system:***

ORRCO will install a PLC control system for all the burning devices, VOC devices, and TOX. ORRCO will install a carbon absorption system consisting of two carbon barrels in series with a test port between to verify the carbon is still active. If the TOX fails, the control system will automatically stop the feed to all cookers, sound an alarm, and switch the flow to the carbon system.

***Add a sour water stripper:***

The process water from a high temperature distillation process contains emulsified fuel components and mercaptans creating an odorous water. A sour water stripper was recommended. We have done some lab testing and the water was substantially improved as well as the fuel was recovered. The recovered fuel components would be blended into the plant fuel and the stripped water would go to water treatment.

***Install a single column rocket:***

ORRCO has a single column oil polishing system (Rocket) and we need to install it for testing and data acquisition. This would allow a more accurate calculation for our permit renewal as well as providing real data. The small amount of emissions would go to the TOX. This is a test unit and not a production system.

Some background on the Rocket oil polish system: The Rocket is a system using activated bauxite to polish the re-refined base oil to make it into a group two base oil without hydro-treating. It is not a filter, it is an absorption system. There is a small amount of heat generated during the absorption process indicating that a chemical reaction is occurring rather than filtration. After absorption, the bauxite is re-activated by a controlled combustion of the remaining oil. The oil burn rate is controlled by the incoming airflow to keep the temperature constant. All the combustion gasses coming out of the vacuum blower go to the thermal oxidizer. This is a common device used in many oil processing plants as an alternative to using hydro-treating.

We look forward to working with you, completing these improvements, and finalizing our air permit renewal. Please let me know if you have any questions and require additional information. We believe these changes will address any odor concerns and represent the best practices available.

Respectfully submitted,

Scott Briggs